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AMMUNITION BULLETIN N°12

FOR INSPECTING ORDNANCE OFFICERS.

(AUGUST 1940).

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CHIEF INSPECTOR OF ARMAMENTS,
WOOLWICH, S.E.18.



1.

SECURITY.

AMMUNITION BULLETIN NO. 12.

for Inspecting Ordnance Officers.

Issued August, 1940.

Issued by -

Chief Inspector of Armaments,
Woolwich.

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117. Mine, Shrapnel, Mark I.
(Figs. 24 and 25)

This mine is intended for use against troops in the open and is actuated by means of a trip wire. It is housed in a mortar which is sunk below ground level, the mine body being projected to a height of about four feet by means of a small cartridge, where it detonates, the detonating arrangements being actuated by the release of a lever as the mine leaves the mortar.

It consists of a mortar, body and sleeve together with a cartridge pistol and a detonator pistol.

The mortar is of cast iron, cylindrical in shape with a solid base. It is formed at the top with two lifting eyes to take a leather carrying strap and shaped on the inside to take a lever by means of which the detonating pistol is actuated. At the bottom, on the inside, it is dished to form a gas chamber.

The body is contained within the sleeve to which it is attached by a set screw the whole being secured to the bottom of the mortar by two fixing screws. Two screwed recesses are formed in the top of the body to take the cartridge and detonator pistol respectively.

The cartridge pistol consists of a steel striker actuated by a striker spring contained in a steel body which is screwed into the top of the mine.

The top of the body is fitted with a striker plate which is shaped to fit under the head of the striker, compressing its spring and retaining it in the cocked position. The plate is provided with a key way to take a safety pin, which fits through an eye in the head of the striker, and is formed with a loop to which the trip wire is attached. The cartridge used is the .303-inch, Ballistite, H, Mark I.Z.

The detonator pistol consists of a brass bush which screws into the top of the mine body on a brass detonator tube and a steel body which is secured to the bush by a knurled ring. The body is shaped to receive a steel lever the lower end of which fits in a slot in the mortar. The top of the lever engages a slot in the head of the striker, compressing its spring and retaining it in the cocked position. The lever is held in a safe position by means of a safety pin and is covered at the top with a paper cover, stuck on, to prevent the entry of debris which might jam the lever.

The Detonator, Mine, Shrapnel, Mark I which fits inside the detonator tube consists of a No. 27 Detonator to the top of which is crimped a length of Instantaneous Fuze Mk. IV. A Cap Chamber to take a copper cap containing priming composition is cemented to the top of the fuze.

The mine is filled Amatol 80/20, the filling hole at the base of the mine body being closed with a screwed plug.

Marking. The mine is painted yellow with a red and green band around the upper and lower parts respectively.

Packing. Four mines, together with four cartridges and a spanner for removing the cartridge pistol, are contained in Box, Mine, Shrapnel, M.91, Mark I. Weight filled 51 lbs. Dimensions L $16\frac{3}{4}$ ", B $4\frac{5}{8}$ ", D $9\frac{1}{2}$ ".

The detonators are packed in Box, tinned plate, No. 334, Mark I. The box holds 12 cartons, each carton containing four detonators.

The trip line and securing picket are provided locally.

Action of mine. When the pull on the trip wire exceeds the safe limit of about 30 lbs. the striker plate of the cartridge pistol is withdrawn. This releases the striker which fires the cartridge the explosion from which expels the mine from the mortar. As the mine leaves the mortar the lever is released and flies upwards releasing the striker in the detonator pistol. This fires the copper cap in the detonator, the instantaneous fuze and No. 27 detonator and the bursting charge of the mine. The height of burst varies from about 3 to 4 feet.

Instructions for laying mine.

(a) Before moving out to lay.

1. Remove the cartridge-pistol (the one with the pull off plate). This is a right-hand thread. A spanner, carried in the mine box, is provided for this purpose.
2. Inspect hole for cartridge and ensure that it is clear. Drop a cartridge into the hole.
3. Replace cartridge-pistol, seeing that the safety pin is pushed in as far as it will go. Screw up tightly.
4. See that the safety pin of detonator-pistol is in place.
5. Remove detonator-pistol by turning knurled ring clockwise.
6. Inspect hole for detonator and ensure that it is clear.
7. Remove a detonator from the package and drop it small end downwards into the detonator recess. The mine may be shaken to ensure that the cap-head of the detonator drops down and rests on the shoulder provided.
8. Replace detonator-pistol with its lever down the slot, in the mortar and screw up knurled ring (turn anti-clockwise).
9. The mine is now ready to be carried out and laid.

At this stage the mine is safe. If either safety pin is accidentally pulled out, replace it.

(b) Laying.

1. Prepare a hole deep enough to accommodate the mine leaving the pull-off plate of the cartridge-pistol not lower than ground level.
2. Drop the mine in the hole and pack round with earth until level with the top of the body. The carrying strap may be left in place.
3. Attach and set up the trip line.
4. Remove safety pin from detonator-pistol and put it in your pocket.
5. The hole may now be filled with earth either tamped or not and any desired camouflage applied. If the paper cover on detonator pistol has been damaged, see that there are no stones which can obviously jam the lever.

6. Remove safety pin from cartridge-pistol and place in pocket.

NOTE: If the tension on the trip line is too great the pull-off plate of the cartridge-pistol will have been displaced, locking the safety pin in place. If this is the case, the trip line tension must be eased and the pull-off plate restored by finger and thumb to its original place. The pin can then be withdrawn.

7. Move away, keeping clear of trip line.

118. Notes on the Self-Igniting Phosphorus Grenade.
Fig. 26.

Description. The Grenade, which is self igniting, consists of a short-necked half-pint clear glass bottle containing yellow phosphorus, water, benzene and rubber, with a free space of 10%, sealed with a plain red crown cork.

The crude rubber, a two-inch strip, gradually dissolves in the container during storage, rendering the contents tacky and therefore assists it to adhere to the object at which the grenade is directed.

The weight of the grenade filled is $1\frac{1}{2}$ lbs.

Action. When the glass is shattered and instantaneous ignition takes place, a dense cloud of choking fumes (Phosphorus pentoxide and sulphur dioxide) is liberated - Care must be taken to observe the direction of the wind to avoid hindering own troops. The Service Respirator A.G. is proof against the fumes, but the smoke is all-obscuring.

The grenades can be thrown like a hand grenade, but it must be remembered that it needs sharp contact with a hard surface to shatter the glass and so ignite the contents.

Thrown against a tank the glass will break and the grenade ignite, but thrown along a tarmac road, the grenade rolls on to a standstill and does not break; therefore it does not ignite and could easily be thrown back.

Packing. 24 grenades are packed in one wire-bound wooden partitioned case measuring 21.5" x 13.75" x 9.25".

Gross weight of case filled - 53 lbs.

The case has two rope handles and is fastened with two wires sealed with lead seals.

The fastening can quickly be broken with a jack-knife, bayonet or similar instrument.

The top of the box is stencilled or branded

HANDLE WITH CASE	A W BOMBS	DO NOT DROP
	FRAGILE GLASS	
	HIGHLY INFLAMMABLE	

An enamelled metal plate is screwed to the inside of the lid giving full instructions of storage and fire precautions.

Storage and Transport. It has been recommended that whenever possible, cases should be stored under water, e.g. streams, ditches, ponds. In any event a water supply must be readily available in case of accident and if cases are not stored under water, a cool space should be found for them and the grenade examined. Should any cracked glass appear, the grenade concerned should be destroyed forthwith. Fires can be extinguished with chemical extinguishers and/or water.

Great care must be exercised in handling these grenades whether in storage or in transit and in no circumstances should the crown cork be removed from the top of the bottle.

It should be noted that, although this grenade does not contain explosives it is filled with a highly inflammable mixture. It should, therefore, be stored apart and must not, on any account, be placed in or near magazines or explosive storehouses.

Method of Treating Phosphorus Burns.

- (1) Wash with dilute alkali solution to neutralise phosphoric acid.
- (2) Wash with 1 per cent. solution of copper sulphate and remove the resulting dark-coloured copper phosphide with forceps.
- (3) Wash with antiseptic solution - boric acid or phenodine.
- (4) Irradiate with ultra-violet light, if available.
- (5) Apply picric acid dressings as for burns generally.

The detailed description of the method is as follows:-

Wash the burn immediately with a solution of Sodium Carbonate, 2 tablespoonsful to a pint of water. The treatment neutralises any phosphoric acid formed as a result of the combustion of the phosphorus, and partially destroys any free phosphorus present. To free the burn from all traces of phosphorus, wash with 1 per cent. solution of copper sulphate. Copper sulphate combines with any free phosphorus, forming copper phosphide, thus preventing further ignition. Remove the resulting dark coloured deposit with the aid of forceps and thoroughly wash with water containing a little antiseptic, boric acid or phenodine.

For extensive burns the use of ultra-violet radiation is very effective. If an ultra-violet lamp is available, dry the affected part and give 1 to $1\frac{1}{2}$ minutes exposure to the light at about 2 feet away. Then apply strips of lint soaked in picric acid solution each day for 3 or 4 days and continue dressing with boric ointment as for ordinary burns. Before each re-dressing wash with boric acid lotion or phenodine in tepid water until the wound is quite clean. Phosphorus burns suppurate much more than ordinary burns. For healing, period is usually about three to four weeks.

119. Batching of Q.F. fixed Ammunition.

The use of the distinguishing letter "X" in the batching system for Q.F. fixed ammunition (which at present indicates Practice flathead shot, reduced charge) is extended to cover "Pointed practice shot, reduced Charge".

The letter "Y" has been adopted as the distinguishing letter to indicate "H.E. shell with burst short Charge".

120. Cartridge, Q.F. 40 m.m. Anti-tank Shot.

This Cartridge (Fig. 27) consists of a Mark I case fitted with a No. 18 percussion primer, a cordite charge of a nominal weight of 10 ozs. 12 drs. and an armour piercing shot.

The Charge of W.T. 144-048 is made up in two lengths consisting of a central portion of 6 ozs. 4 drs. cut about $10\frac{1}{2}$ inches long surrounded, at the base end, by a shorter portion of 4 ozs. 8 drs. about $7\frac{1}{2}$ inches in length and at the front end by a $\frac{1}{2}$ dr. tinfoil strip secured by silk sewing, the whole filled loose in the cartridge case or if more convenient ties may be used on the central portion.

The armour piercing shot is flat headed and solid to a point below the shoulder where it is recessed in two diameters for lightness. A cannelure for attaching the cartridge case to the shell is formed near the base, the case being secured by indenting all round. A copper driving band is fitted into a groove near the base, the groove has one waved rib to prevent the band turning on the shell.

The weight of the shell is 2 lb. 5 ozs. 15 drs.

121. War time concessions to facilitate output of Ammunition.

In order to facilitate inspection and increase output the following war period concession to filling factories have been approved:-

1. Marking and stencilling cartridges.

The following to be omitted :-

(A) Q.F. (Fixed) Cartridges.

F.F. monogram and date from boxes and cartridge cases.

(B) Q.F. (Separate) Cartridges.

(a) Charge bags. All detail except charge numbers and propellant lot numbers.

(b) Boxes and Cartridge Cases.

(i) Charge weight.

(ii) Description of Cordite, e.g. W.057, W.T. 206-100.

(iii) F.F. Monogram and date.

(C) B.L. Cartridges.

(a.1) B.L. howr. charge bags.

All detail except charge numbers, propellant lot number and nominal charge weight of complete cartridge.

(a.2) B.L. gun charge bags.

(i) Description of cordite.

(ii) F.F. monogram and date.

(b) Boxes.

(i) Description of cordite.

(ii) F.F. monogram and date.

2. Shell and shell boxes.

Details of :-

Gaine.

Exploder.

F.F. Monogram.

Date of filling on all types except Chemical Shell.

3. Fuze cylinders. These may be issued unpainted and adhesive tape may be used in lieu of soldered tear off bands. This concession also applies to primers, percussion tubes and igniter tracers.

122.

ENEMY AMMUNITION.

German ammunition identification marking.

The following is a list of identification markings of German S.A.A., Mortar bombs, Grenades, Signal Cartridges and parachute flares, translated from a captured secret document.

No. of Type	Marking of Ammunition	Translation of Marking
<u>Hand weapon and machine gun ammunition.</u>		
1	Patr. s. S. i. L.	s. S. cartridges in chargers (ordinary ball ammunition).
2	Patr. s. S. o. L.	s. S. cartridges without chargers (ordinary ball ammunition).
3	Patr. S. m. K.	S. m. K. cartridges (armour piercing)
4	Patr. S. m. K. L. -spur	S. m. K. cartridges (tracer).
5	Patr. S. m. K. (H)	S. m. K. (H) cartridges (incendiary).
6	B. Patr.	B cartridges (explosive).
7	Patr. f. Pz. B (d)	Cartridges for German anti-tank rifles
8	Patr. f. Pz. B (poln)	Cartridges for Polish anti-tank rifles
9	Pist. Patr. 08	Cartridges for 9 m.m. parabellum pistols
10	Pist. Patr. 7.63 m/m.	Cartridges for 7.63 m.m. pistols
11	Pist. Patr. 7.65 m/m.	Cartridges for 7.65 m.m. pistols
12	Pist. Patr. 9 m/m.	Cartridges for 9 m.m. pistols
13	Pist. Patr. M/12 (Steyr)	Cartridges for Steyr model 12 pistols
14	Pist. Patr. M/22 (t)	Cartridges for Czech model 22 pistols
15	9 m/m. Pist. Patr. M. 34 (f. Øst. M. P.)	Cartridges for 9 m.m. pistols model 34. (Austrian machine pistol)
<u>Mortar bombs.</u>		
43	1 Gr. W. 36	Bomb for light mortar model 36 of 50 m.m. calibre.
44	8 cm. Wgr. 34 } für	Bomb for 8 c.m. heavy mortar model 34.
45	8 cm. Wgr. 34Nb. } s. Gr. W. 34	Smoke bomb for heavy mortar model 34.
46	M 19	Bomb for model 19 mortar ?
47	8 cm. Gr. W. M/36 (t)	Bomb for 8 c.m. mortar Czech model 36.
48	m. M. W. 16	Bomb for medium minenwerfer model 16.
58	10 cm. Wgr. Nb. (Te) } für	Bomb for 10 c.m. mortar with smoke units (Nebeltruppen) (Te) (1)
59	10 cm. Wgr. Nb. (St) } Nb. W.	Bomb for 10 c.m. mortar with smoke units (St) (1)
<u>Hand Grenade.</u>		
50	Stielhandgranate 24	Hand grenade model 24.
<u>"Very" Lights and signal cartridges.</u>		
	Leuchtpatronen (1. Stck)	Illuminating cartridges, i.e. "Very" lights.
	Signalpatronen (1. Stck)	Red signal cartridges.
	Signalpatronen, grün (1. Stck)	Green signal cartridges.
163	M. Patronen (i. Stck)	Cartridges M X
164	R. Patronen (i. Stck)	Cartridges R Ø
165	Pfeifpatronen (iStck)	Whistling cartridges (gas signal)
166	Handleuchtzeichen, weis (iStck)	Hand flares, white

No. of Type	Marking of Ammunition	Translation of Marking
167	Handleuchtzeichen, rot (i.Stck)	Hand flares, red.
168	Handleuchtzeichen, grün (i.Stck)	Hand flares, green
169	Fallschirmleuchtpatronen (i.Stck)	Parachute flare cartridges
170	Rauchstrichpatronen, rot, m. r. V. (i. Stck)	Red star cartridges
171	Rauchstrichpatronen, violett (i. Stck)	Cartridges leaving a trail of violet smoke
172	Rauchzeichenpatronen, blau (i. Stck)	Blue smoke cartridges
173	Handrauchzeichen, rot (i. Stck)	Hand Signal Fireworks, red.
174	Handrauchzeichen, grün (i. Stck)	Hand signal fireworks, green
175	Handrauchzeichen, blau (i. Stck)	Hand signal fireworks, blue
176	Handrauchzeichen, violett (i. Stck)	Hand signal fireworks, violet
180	Nebelhandgranaten (i. Stck)	Hand smoke grenades
181	Nebelkerzen 34 (i. Stck)	Smoke candles, model 34
182	Nebelkerzen S (i. Stck)	Smoke candles, model S
<u>Ammunition not actually in use on 23.2.40 but probably brought into use since that date.</u>		
191	Fallschirmrauchpatr. blau (i. Stck)	Parachute flare cartridges giving off blue smoke
192	Rauchbündelpatr. violett (i. Stck)	Violet smoke cartridges.
193	Rauchbündelpatr. violett (i. Stck)	Blue smoke cartridges
194	Fallschirmrauchpatr. violett (i. Stck)	Parachute flare cartridges giving off violet smoke
195	Sternbündelpatr., grün m. r. V (i. Stck)	Cartridges giving off green stars
196	Sternbündelpatr., weiss m. r. V (i. Stck)	Cartridges giving off white stars
199	Eierhandgranate 39	Egg shaped hand grenade model 39

* Type doubtful. Possibly magnesium cartridges to be used at night
for blinding the enemy.

Ø Type uncertain. Possibly Rauch smoke cartridges

Significance of Te and St is not known. Possibly it means Te and
Strcung, referring to chemical substances.

123. German Signal Cartridge Equipment. (Fig. 28).

The following is a description of a signal equipment recovered
from German Aircraft.

It consisted of a container holding a signal cartridge
pistol, and, -

10 red signal cartridges.

7 green signal cartridges.

7 white signal cartridges.

also separately, -

3 green signal cartridges

1 red signal cartridge.

1 signal cartridge containing four red stars.

Container. (fig. 28) - The tinned-iron container was of semi-circular cross-section, 7.6 inches diameter and about 12.8 inches deep. It was originally fitted with a lid and a pull-off strip, soldered on, but these were missing. A leather strap was fastened to the back of the container. Fitting inside the curved front were three removable racks of aluminium sheet, spot welded at the joints. Each rack held three red, one green and two white cartridges, the top of the racks being painted so as to designate the colour of the stars.

A pistol and a flat cartridge container of aluminium sheet containing one red, one white and four green cartridges fitted in the space remaining between the racks and the back of the container. The weight of the complete container with pistol was 4.6 kg. (about 10 lb.) The gunmetal pistol was fitted with a safety catch which came into operation when the pistol was broken for loading.

Red cartridges. - The cartridge cases were of solid brass, 1.04 inches diameter and 4.03 inches long, the rim of the cases being finely milled all round. The cap in the base of the case was waterproofed with a black cement and a thin foil disc over the outside, and by a thin foil disc over the two flash holes inside the case. The propelling charge consisted of gunpowder with a small proportion of nitrocellulose. The star was ejected by the propelling charge in an aluminium star container, which was a close fit in the cartridge case. The bottom of the star container was fitted with a short delay, part of which was pressed into a brass tube surrounded by clay and the rest into a rolled paper wad which was pressed down on to the clay plug. The star composition, pressed as a bare pellet, was primed at each end with a gunpowder priming pellet and priming paste. This was wrapped in one turn of waxed paper and was held in the star container by a thin felt wad and a closing disc of millboard, painted red. A small gunpowder charge in a hole in a felt washer at the delay end of the star was employed for lighting and ejecting the star from the container after the delay had burnt through. The remaining space in the cartridge case was filled with felt washers, one cork washer and a final closing cap of aluminium, spun into the brass cartridge case on the inside without affecting its overall diameter. The closing cup was painted red.

Action. - When the cartridge is fired the star container is ejected from the pistol, the delay lighting up from the flash of the opening charge. After the delay has burnt through, at a point which should correspond approximately to the apex of the trajectory, the star lights up and is expelled from the star container and burns as a bare pellet.

Green cartridges. - These were very similar to the red cartridges and only differed in minor details. The rim of the brass cartridge case was not milled. No gunpowder charge was placed at the end of the delay unit to light up and expel the star. The star had four channels formed along its length during the pressing operation. A gunpowder pellet was pressed in one end of the star composition and both ends and the four channels were coated with priming paste and dusted with fine grain gunpowder.

White cartridges. - The rims of the brass cartridge cases were finely milled half-way round. The star consisted of a seamless zinc container into which the star composition was pressed. The top end was closed by millboard discs and at the ignition end was a zinc cap containing a perforated gunpowder priming pellet. This pellet lights up from the propelling charge through a hole in the zinc cap which is blown off on ignition of the star composition. The remaining space in the cartridge was filled up with felt washers, a cork washer and finally closed by a lead alloy closing cup soldered to the inside of the brass case. The closing cup was painted white. The white cartridges, when broken down, smelt of sulphuretted hydrogen from decomposition of the star composition and the metal components inside the case were tarnished.

Four-star cartridge. - This is probably a recognition cartridge. The four stars were enclosed in an aluminium cartridge case the rim of which was coarsely milled all round. The weight of the empty cartridge was 21.7 grams compared with 49.5 grams for the solid brass case, which was of the same size. A propelling charge of 1.3 grams was held in place by an inverted aluminium cup with flash holes punched in the top. The stars were pressed in seamless aluminium cups and the flash from the propelling charge lit up the gunpowder priming at the end of each star, part of the surface of which was exposed to the flash by radiusing the top edges of the stars. An intermediate priming composition was used between the gunpowder and the star composition to assist in lighting up the latter. The cartridge was finished off with a cork washer and a millboard closing disc, and the top rim of the aluminium case was spun over. The total weight of the cartridge was 97.6 grams. Mean weight of stars 18.1 grams. Two stars were burnt at rest; after a delay of 0.5 second the star composition burnt for about 5 seconds with a moderate red flame with a mean candle power of 18,500. The delay composition itself burnt with a small white flame.

Comparison with Service Cartridges. - A comparison of the times of burning and candle powers of these cartridges with corresponding British Service 1-inch cartridges show that the times of burning of the German cartridges are shorter, that the candle powers of the red and green are about the same, but that the candle power of the white is much less.

The recoil on firing the German cartridges was considerable. The stars were projected to a height of about 350 feet.

124. Percussion Fuze A.Z.23 R.h.S(0.8)ung.
(Fig. 29)

This fuze is used in 15 c.m. shell for S.F.H.18 and possibly also in 15 c.m. guns. It is generally similar to the A.Z.23 R.h.S(0.25) (Item 67 Bulletin No. 7) - the only difference being in its dimensions and in the delay mechanism, which in this fuze can be set to give a delay of .8 seconds.

It consists chiefly of a brass body, a fixed lower ring and an upper setting ring which can be turned by means of notches using a special key. The lines at O.V. and M.V. can thus be brought to coincide with the lines marked on the body and lower fixed ring.

The fixed lower ring is screwed and pinned to the body. It bears on a shoulder on the setting ring and thus secures it in position. The setting ring on the underside is formed with three distinct bearing planes.

Delay mechanism.

This differs from the A.Z.23(0.25) fuze in the control mechanism. In this case the copper plate instead of being free in relation to the centrifugal bolt is attached to it by a small pin. Displacement of the centrifugal bolt and consequently the copper plate under the effects of centrifugal force can be prevented by the stem of a detent which is actuated by a spring.

The position of this detent is controlled by the bearing planes of the setting ring. When Part 1 of the bearing planes is over the detent (setting M.V.) as shown in section in Fig. 29, the stem of the latter protrudes into the space in which the centrifugal bolt is positioned and prevents its movement. The central channel is thus closed and the fuze can only function on delay.

When part 2 or 3 of the setting planes (setting O.V.) is brought over the detent, the latter is free to move slightly longitudinally and, under pressure from its spring, its tip is withdrawn from behind the centrifugal bolt. The bolt can then move outwards and compress its spring thus withdrawing the copper plate and leaving the central channel of the fuze clear.

It will be observed that the setting cap has three bearing planes although only two are required in this fuze. The reason for this is that the setting cap is identical with that used with the A.Z.23 umg. M.2.V. (which is similar to the A.Z.23 (0.8) umg) in which the three settings (no delay, 0.2 delay, 0.8 delay) are used. In this case, the three planes are necessary. It is, therefore, probably with a view to securing standardisation that the fuze described here has three planes as in the corresponding setting cap of the A.Z.23 umg. M.2.V.

FIG. 24.

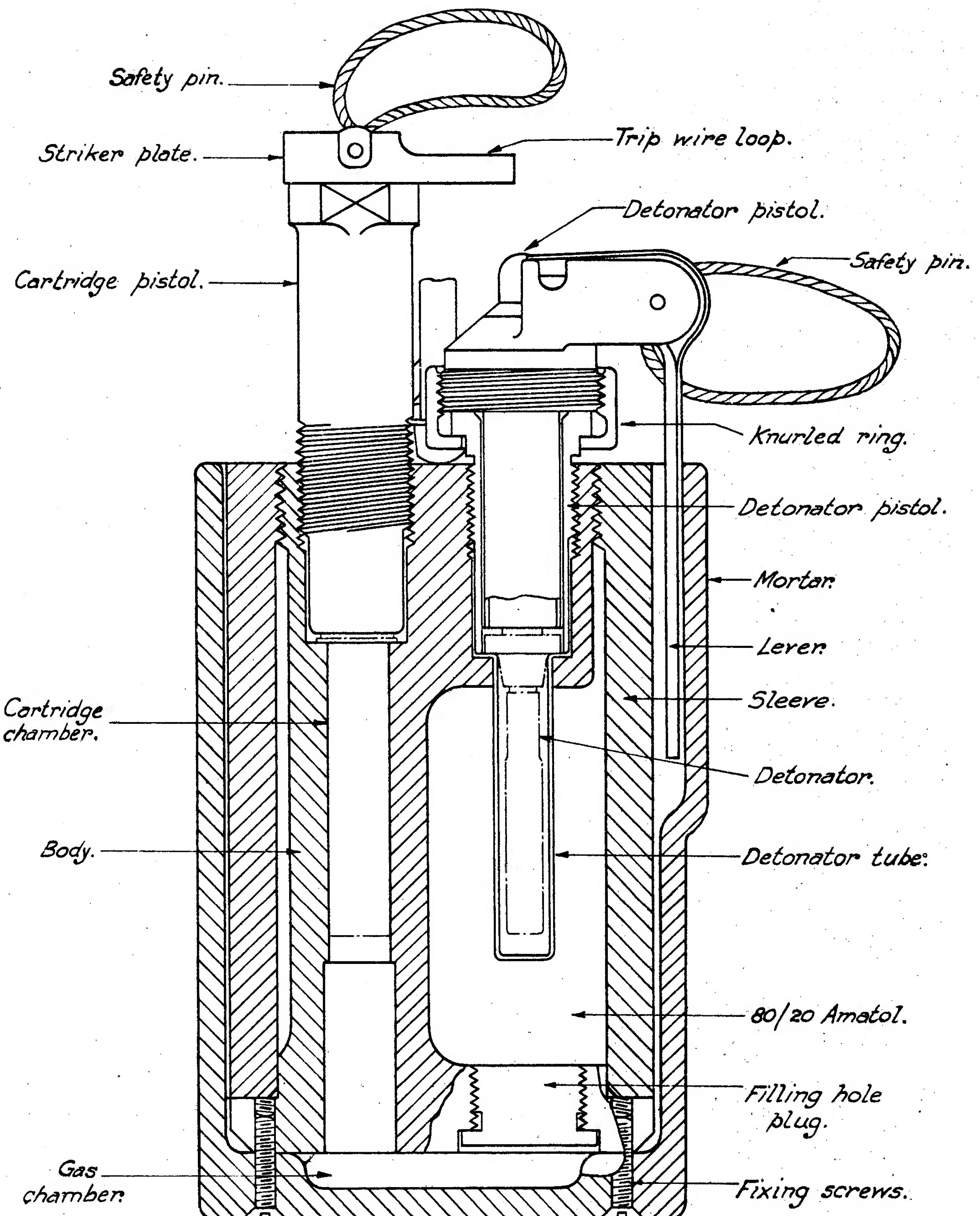
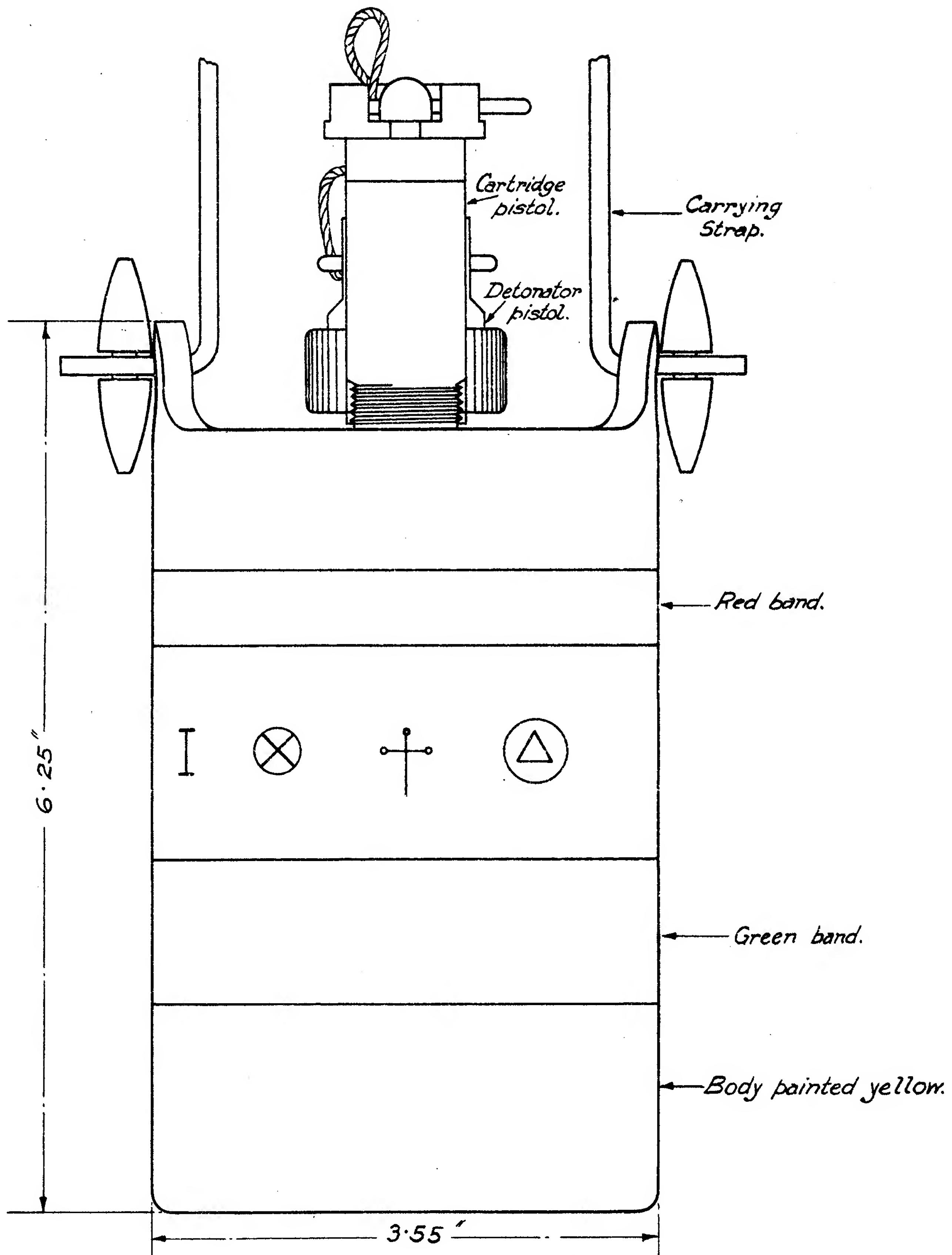


FIG. 25.



⊗ Monogram of Firm or station filling.

× Date of filling (month & year)

Δ Series number in ring denoting filled lot.

FIG. 26.

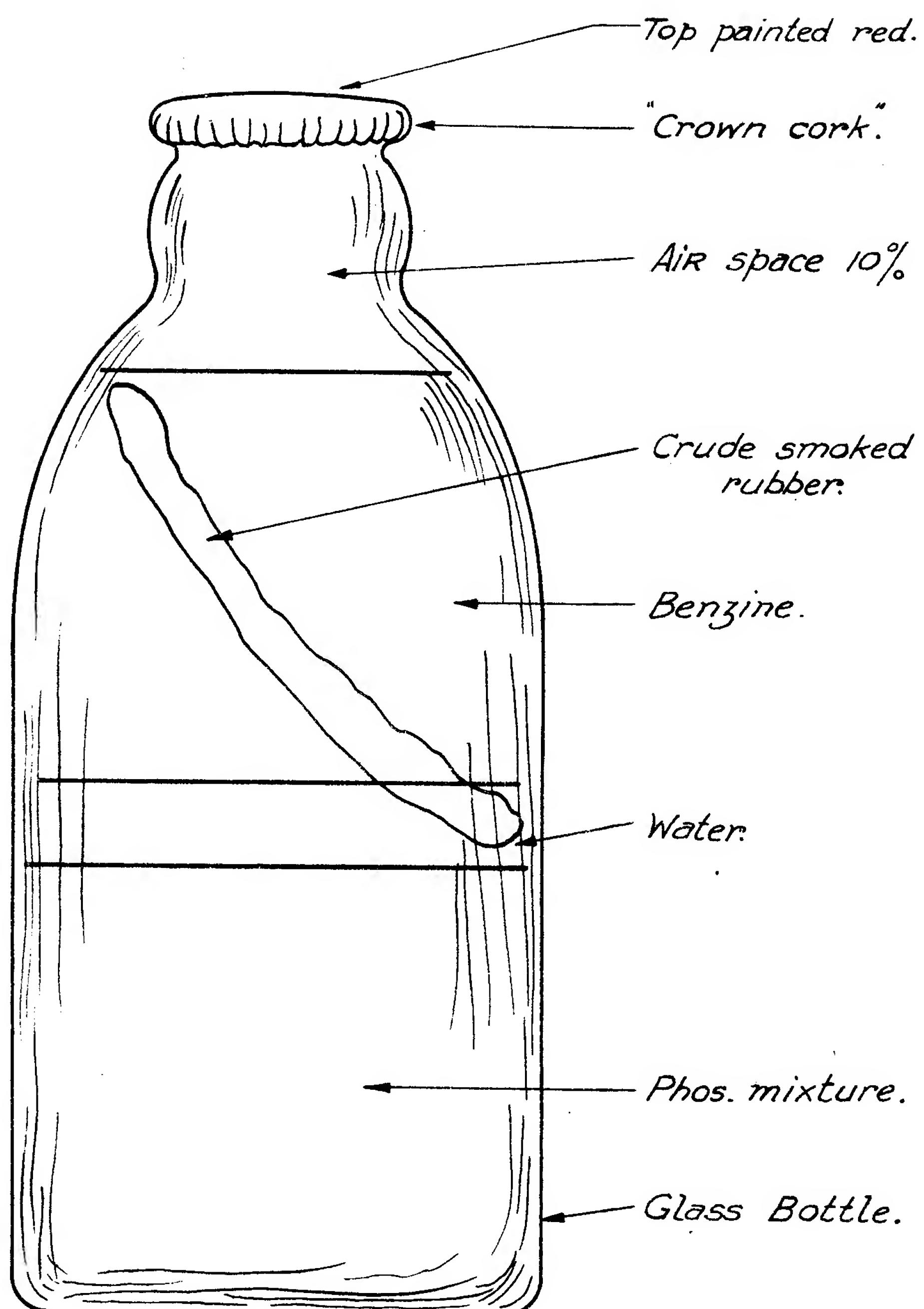


FIG. 27.

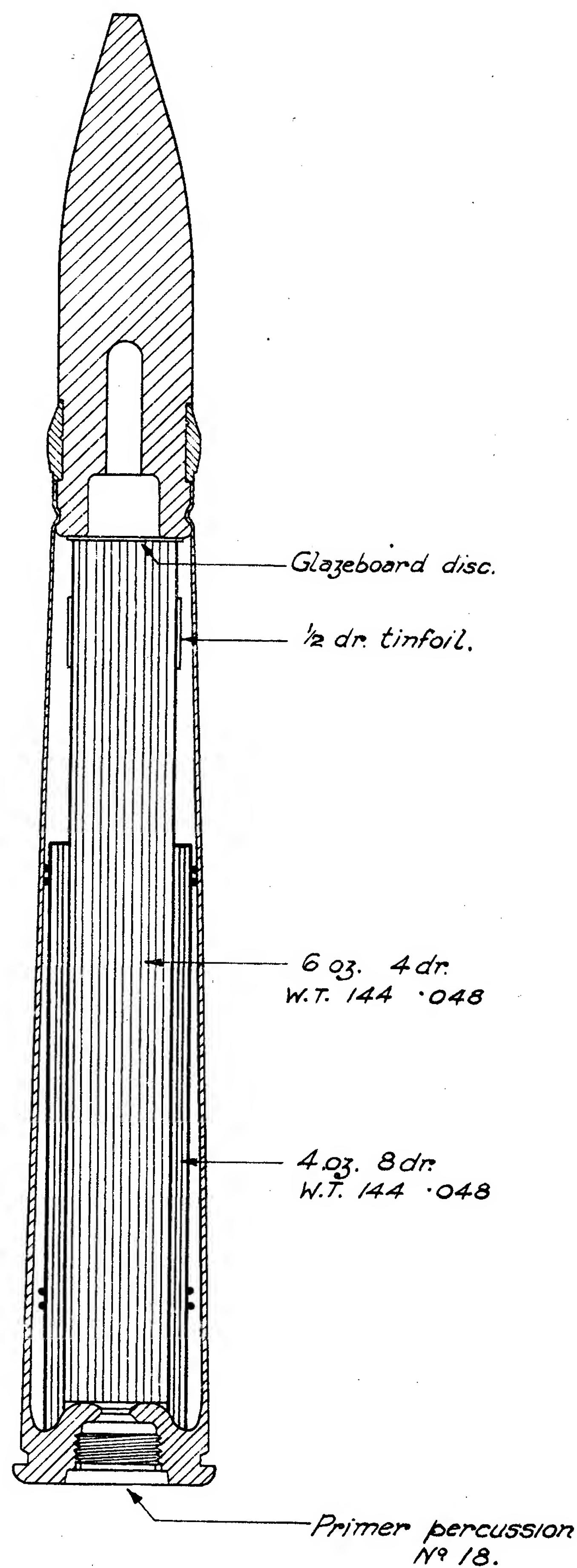


FIG. 28.

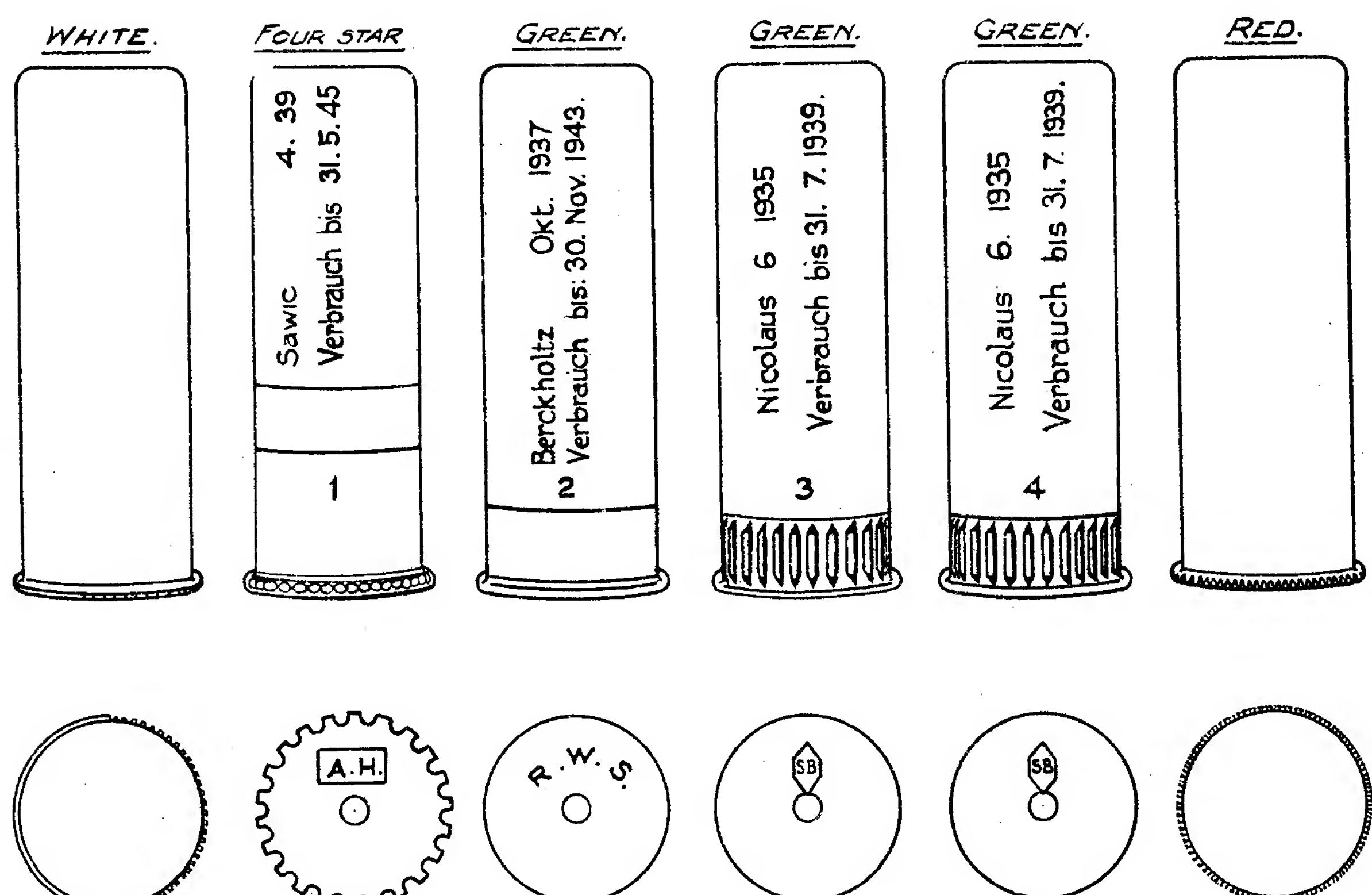
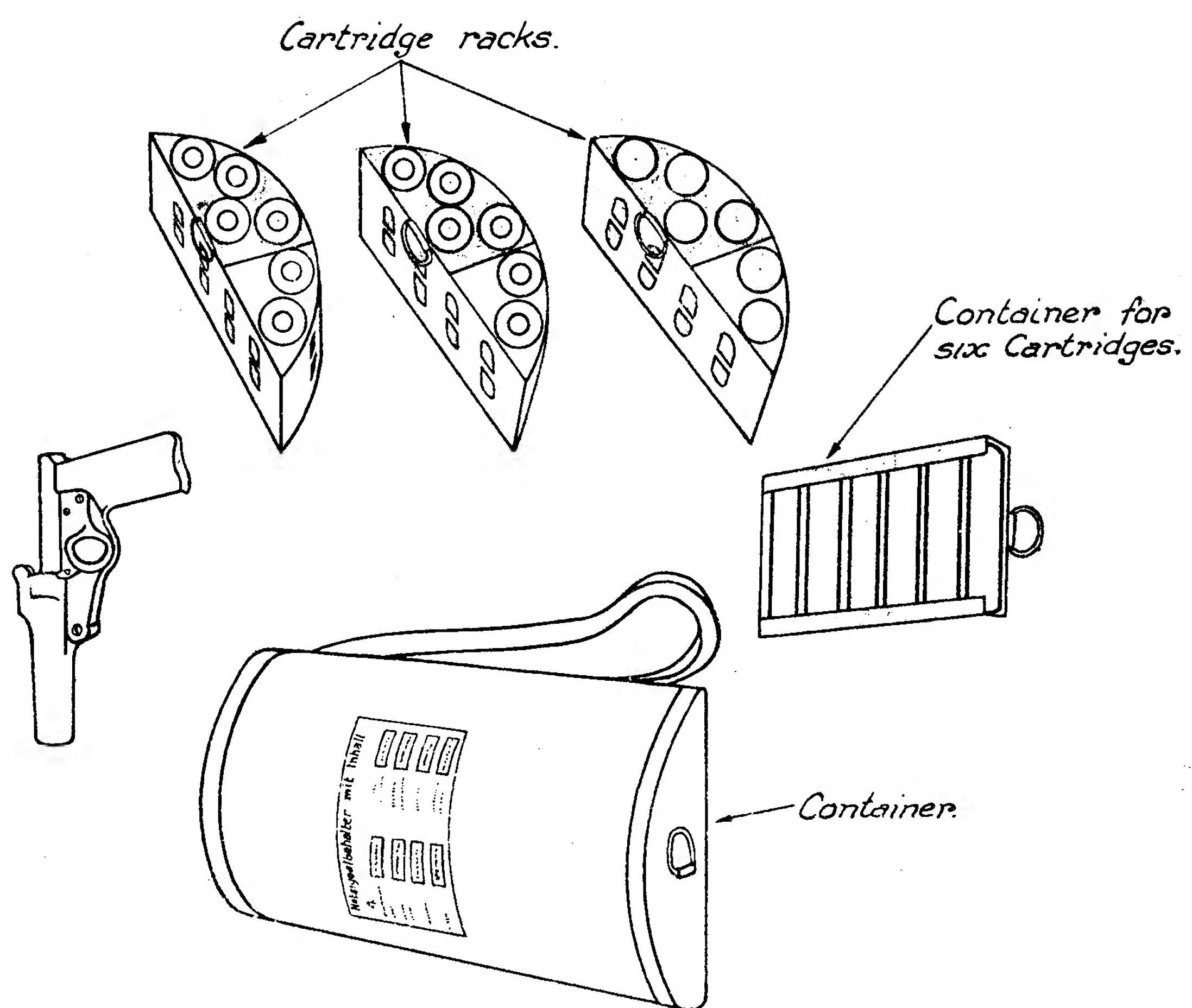


FIG. 29.

